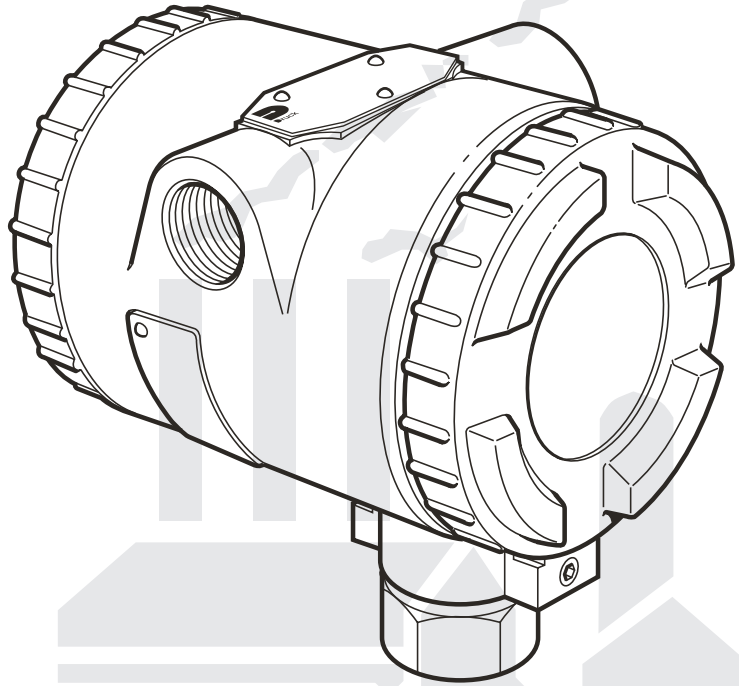
Druck

RTX 1000
Rangeable Pressure Transmitter



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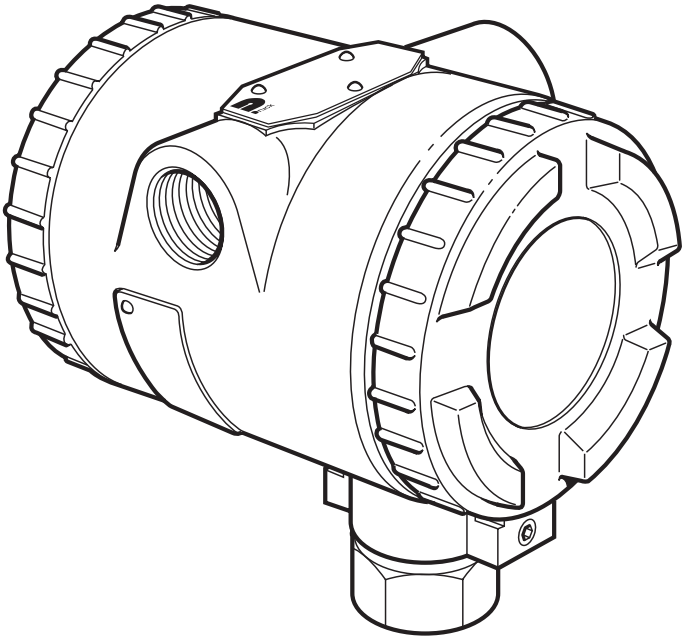
USER MANUAL KA210

Druck RTX 1000
Rangeable Pressure Transmitter
User Manual



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KA210 Issue No. 3

Safety

The manufacturer has designed this equipment to be safe when operated using the procedures detailed in this manual. The user must not use this equipment for any other purpose than that stated. Do not apply values greater than the maximum value stated.

This manual contains safety and operating instructions which must be followed to ensure of safe operation and to maintain the equipment in a safe condition. The safety instructions are either warnings or cautions issued to protect the user and the equipment from injury or damage. Use qualified plant installation personnel and good engineering practice for all procedures in this manual.

Transmitter Certification

This equipment can be certified for use in various types of dangerous areas. The calibration certificate for this equipment states the applicable approvals certificate. The manufacturer can supply the appropriate certificate when requested.

The installation requirements and procedures are stated on the following drawings sent with the transmitter:

X-A3-0074 RTX 1000 Series Intrinsically Safe Installation

ABBREVIATIONS

The following abbreviations are used in this publication.

Note: *Abbreviations are the same in the singular and plural.*

abs	absolute
CSA	Canadian Standards Association
AWG	American wire gage
DAC	digital to analogue convertor
EMI	electromagnetic interference
°C	degrees Celsius
°F	degrees Fahrenheit
FM	Factory Mutual Research Corporation
LCD	liquid crystal display
LRV	lower range value
m	meter
max	maximum
min	minimum/minute
mA	milliampere
mbar	millibar
mm	millimeter
mmH_2O	millimeters of water
MSDS	Materials Specification Data Sheet
Nm	Newton meters
PCB	printed circuit board
psi	pound-force per square inch
PTFE	polytetrafluoroethylene
RFI	radio frequency interference
RH	relative humidity
URL	upper range limit
URV	upper range value
V	Volt
V d.c.	Volts direct current

CONTENTS

Section	title	page
1	INTRODUCTION	2
1.1	General	2
1.2	Specification	2
2	INSTALLATION	7
2.1	General	7
2.2	Location and mounting	7
2.3	Rotating the housing	8
2.4	Impulse piping	9
2.5	Liquid level measurement	14
2.6	Electrical connection	16
2.7	Description	20
2.8	System check	22
3	OPERATION	23
3.1	General	23
3.2	Configuring the transmitter	23
3.3	Zero check	24
4	CALIBRATION	29
4.1	Equipment	29
4.2	Calibration	29
5	MAINTENANCE	31
5.1	General	31
5.2	Fault finding	32
5.3	Returned materials procedure	33
5.4	Approved service agents	34

CONTENTS (contd)

ILLUSTRATIONS

Figure	title	page
1-1	General view	1
1-2	Dimensions	5
2-1	Housing locking screws	8
2-2a	Liquid service piping arrangement	11
2-2b	Gas service piping arrangement	12
2-2c	Steam service piping arrangement	13
2-3	Open tank level measurement	15
2-4	Power and load requirements	16
2-5	Electrical conduit	18
2-6	Transmitter wiring	19
2-7	Transmitter schematic diagram	21
3-1	Switch location	24
3-2	Optional Display Switch location	27
4-1	Calibration set-up	29

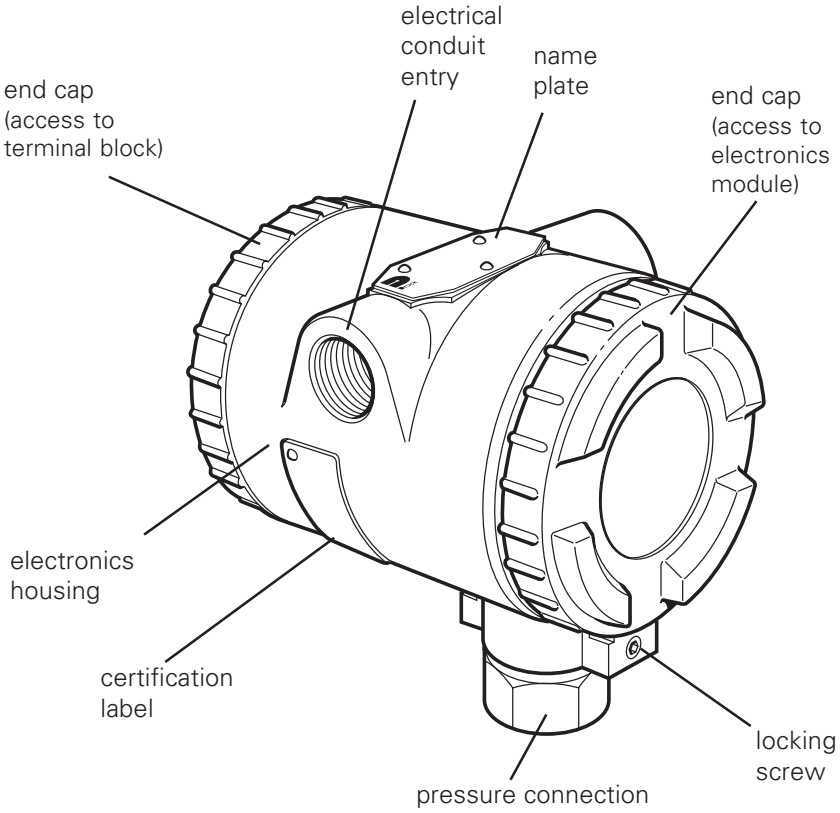


Figure 1-1 General view

1 INTRODUCTION

1.1 General

The Druck RTX 1000 is a process pressure transmitter in a cast aluminum housing. The transmitter's pressure sensing system can be adjusted for zero and span through push-buttons and switches located on an electronics module.

1.2 Specification

Ranges

The transmitter is supplied in the following standard (zero based) ranges or calibrated to any acceptable intermediate span specified.

Gauge or absolute

..... 0 - 1 psi to 0 - 10 psi
..... 0 - 0.3 psi to 0 - 30 psi
..... 0 - 10 psi to 0 - 100 psi
..... 0 - 30 psi to 0 - 300 psi
..... 0 - 100 psi to 0 - 1000 psi

Sealed gauge or absolute

..... 0 - 300 psi to 0 - 3000 psi
..... 0 - 1000 psi to 0 - 10000 psi
..... 0 - 2000 psi to 0 - 20000 psi

Environment

Service ..... Liquid, gas or vapor
Pollution Degree 2
Installation (over-voltage) Category II

Temperature

ambient
(Division 2 or Explosion proof)..... -40°F to +104°F (- 40°C to +40°C)
ambient (Intrinsic safety) ..... -40°F to +176°F (- 40°C to +80°C)
ambient
(Not CSA or FM approved) ..... -40°F to +185°F (- 40°C to +85°C)
LCD Option ..... -4°F to +158°F (- 20°C to +70°C)
process ..... -40°F to +284°F (- 40°C to +120°C)
compensated ..... -40°F to 185°F (- 40°C to +85°C)

Humidity limit

.....0 - 100% RH

Electrical Conduit Connections

Refer to table 1-1.

Process Connections

Refer to table 1-1.

Sensor Fill Fluid

..... Silicone Oil

Electronics Housing

Material ..... Low copper aluminum alloy with epoxy double coating
or ..... stainless steel 316L with aluminum bronze end caps
Enclosure type 4X

Overpressure

The rated pressure can be exceeded by the following multiples without degrading performance.

..... 6 x URL for ranges up to 10 psi
.....4 x URL (2030 psi max) for ranges from 30 psi to 1000 psi
..... 2 x URL (13000 psi max) from 3000 psi to 10000 psi
.....30000 psi for 20000 psi range

Pressure Containment

Application of pressure in excess of the following may damage the sensor but process media leakage will not occur.

.....10 x URL for ranges up to 10 psi gauge
.....6 x URL (3000 psi max) for ranges from 30 psi to 1000 psi gauge
..... 3000 psi for ranges up to 1000 psi absolute
20000 psi for ranges from 1000 psi to 10000 psi sealed gauge and absolute
.....30000 psi for 20000 psi range

Process Media

Liquid, gas or vapor compatible with a fully welded assembly of a Hastelloy C276 diaphragm with either 316 stainless steel or Hastelloy C body. Complies with NACE MR-01-75.

Output Current

(two wire configuration) ..... 4 - 20 mA
{proportional to the calibrated pressure range}

Supply Voltage

.....9 to 35 V d.c.
IS applications ..... 28 V d.c. maximum

Performance

Range Adjustment - Span setting

The transmitter output can be adjusted to give a full 4 to 20 mA output change for any span down to 10% of the URL.
Example: A 30 psi device can be adjusted down to a span of 3 psi (10:1 down-ranging) minimum.

Range Adjustment - Zero offset

The zero (4 mA or V) output of the transmitter can be set anywhere within the range -14.5 psi gauge to +90% of the URL (-5 psi for 5 psi range).
Example: A 30 psi gauge device can be adjusted to give 4 to 20 mA or 1 to 5 V for -14.5 to +14.5 psi gauge. If down-ranged to 3 psi span 4 to 20 mA can be provided anywhere within the measurement range up to a maximum offset of +26 psi, allowing a calibrated range of 26 to 30 psi.

Accuracy

±0.15% of calibrated span including the combined effects of non-linearity, hysteresis and repeatability.

Long Term Stability

At standard reference conditions, the calibration will not change by more than 0.1% per year.

Temperature Effects

-40°F to -4°F (-40°C to -20°C)	±(0.5% URL +1% span)
-4°F to +122°F (-20°C to +50°C)	±(0.25% URL +0.75% span)
+122°F to +185°F (+50°C to +85°C)	±(0.5% URL +1% span)

Mounting position effect

Negligible effect. For ranges below 10 psi, the gravitational offset effect can be adjusted by the zero control.

Turn-on Time

..... 2 seconds

Dimensions

..... see figure 1-2

Aluminum housing

without options ..... 2.6 lbs (1.2kg) approximately

Stainless steel housing

without options ..... 5.94 lbs (2.7kg) approximately

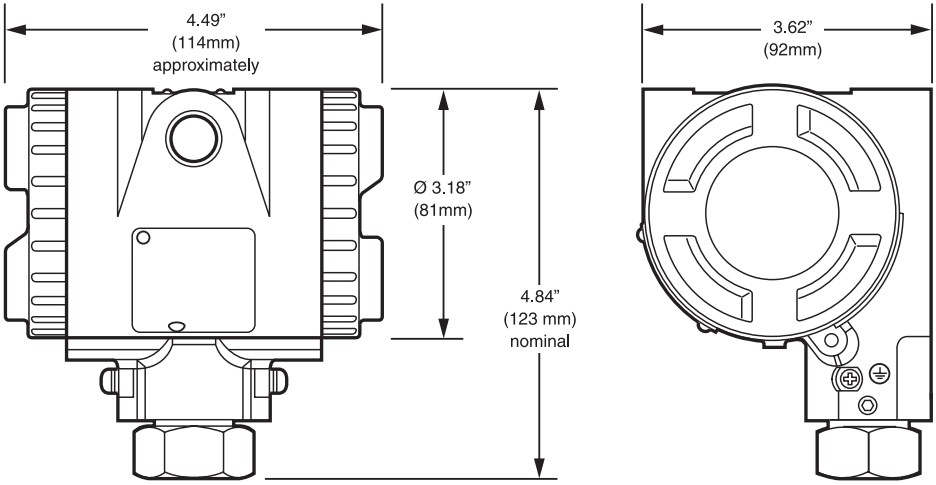
Options

..... Mounting bracket/bolts (stainless steel)

..... LCD indicator

..... Material traceability per EN10204 3.1B

..... Improved accuracy (0.075%)



Dimensions in inches (millimeters) - not to scale

Figure 1-2 Dimensions

Identification Coding

Table 1-1 shows the identification codes for the transmitter. It is important to check this information before installing the transmitter.

Table 1-1 Identification codes

X 10	Base Model Number			
Code	**Diaphragm**	**Process Wetted Body**		**Fill Fluid**
00	Hastelloy C*	316 stainless steel*		Silicone oil
10	Hastelloy C	Hastelloy C		Silicone oil

Code	Range		
04	0 - 1 psi	to	0 - 10 psi
07	0 - 3 psi	to	0 - 30psi
10	0 - 10 psi	to	0 - 100 psi
13	0 - 30 psi	to	0 - 300 psi
16	0 - 100 psi	to	0 - 1000 psi
18	0 - 300 psi	to	0 - 3000psi
22	0 - 1000 psi	to	0 - 10000 psi
24	0 - 2000 psi	to	0 - 20000 psi (Not CSA or FM approved)

Code	Type
A	Absolute
G	Gauge *(sealed gauge for ranges above 1000*psi)

Code	Process Connection
1	G½ female
2	½-14 NPT female
3	G½ male to BS EN 387-1 (DIN 16288)
4	½-14 NPT male
5	9/16 AE medium pressure tube autoclave fitting **

Code	Electrical Entry
N	½-14 NPT female (via adaptor)

Code	Electronics Housing
O	Aluminium Alloy
S	Stainless Steel

Code	Approvals
O	Not CSA or FM approved
C	CSA approved
F	FM approved

Code	Options
O	None
L	Digital indicator
B	Bracket mounting
T	DIN 3.1B material certificate
H	Improved accuracy (0.075%)

Example identification code

RTX10 00 07 G 2 N O O O

*** 20000**psi **device (range code 24) diaphragm and process wetted body is Inconel 625**
**** applies to range 24 only**

2 INSTALLATION

2.1 General

The following procedures detail the correct installation of the unit. Use qualified plant installation personnel and good engineering practice for the procedures in this section.

WARNINGS

1 **OBSERVE APPROPRIATE LOCAL SAFETY INSTRUCTIONS.**
2 **BEFORE INSTALLING EXAMINE ALL FITTINGS AND EQUIPMENT FOR DAMAGE AND MAKE SURE THAT ALL EQUIPMENT IS TO THE CORRECT PRESSURE RATING.**
3 **MAKE SURE THE CORRECT TRANSMITTER TYPE IS FITTED CHECK THE IDENTIFICATION CODE BEFORE INSTALLATION.**

Special Tools and Equipment

The following special tools and equipment are required.

Note: *Equivalent substitutes can be used.*

Special Tools

- Torque wrench 10.8 lb.ft for torque (15 Nm).
- Unomat UPS-II [measuring current output].
- Multimeter [measuring loop resistance].

Materials

- Piping - required length and rating depends on the distances.
- Fittings to connect above including (but not limited to):
  - Pipe tee (steam or high temperature liquid).
  - Pipe fittings.
- Pipe compound or Teflon tape (where local piping codes allow).
- Loctite PST sealant.

2.2 Location and Mounting (Figure 2-2)

Although designed to withstand harsh industrial environments, the transmitter should be located to minimize the following:

- Vibration.
- Ambient temperature fluctuations.
- Physical impact or shock.

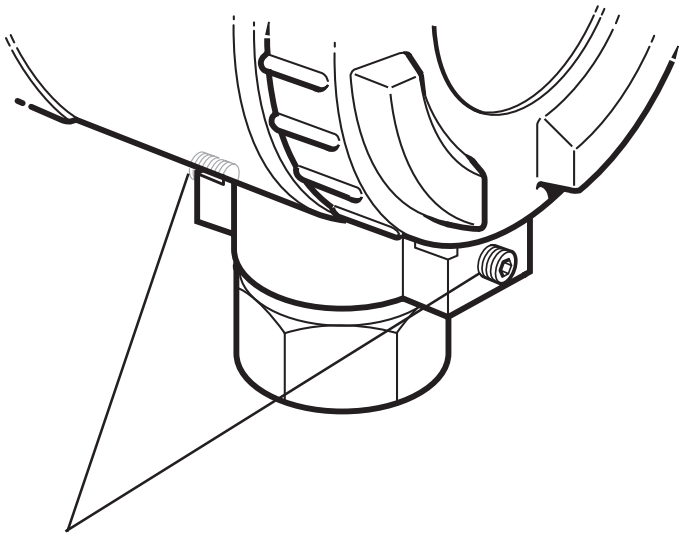
2.3 Rotating the Housing (Figure 2-1)

CAUTION:

DO NOT ROTATE THE ELECTRONICS HOUSING ON THE TRANSMITTER MORE THAN 180 DEGREES RELATIVE TO THE PRESSURE CONNECTION.

Two locking screws (hexagon socket screws) lock the electronics housing to the sensor body; both these screws must be loosened to rotate the housing.

Note: *Do not remove the locking screws.*



locking screws
(hexagon socket screws)

Figure 2-1 Housing locking screws

2.4 Impulse Piping (Figure 2-2)

The purpose of arranging impulse piping for the specific application is to maintain a single phase of fluid in the piping and transmitter. Liquid applications should maintain a liquid state and allow any air or gas formation to travel up and away from the transmitter. Gas applications should allow the formation of liquids to drain down and away from the transmitter.

The pipe or tubing used for connection must be rated for continuous operation at the pipeline designed pressure and temperature. Threaded pipe fittings create voids (where air can be trapped) and increase the possibility of leaks. When installing the connecting tubing or impulse piping, the following apply:

- Horizontally installed impulse piping must slope at least 1" per foot (approximately 75 mm per meter). For liquid and steam applications the piping must slope down towards the transmitter. For gas applications the piping must slope down away from the transmitter.
- Impulse piping should be kept as short as possible and maintained at ambient temperature avoiding fluctuations and gradients.
- Installations outdoors for liquid or saturated gas service may require insulation and heat tracing to prevent freezing.
- For installations where the transmitter is more than 6 feet (1.8 m) from the tapping, the impulse piping must be supported to prevent sagging and vibration.
- Impulse piping must be located in protected areas or against walls or ceilings. If routed across a floor, protective coverings or kick plates must be used. High temperature piping or equipment should be avoided.
- Appropriate pipe sealing compound rated at the design piping temperature must be used on all threaded connections. When making threaded connections between stainless steel fittings, Loctite PST Sealant is recommended.

Transmitter pressure connections

The recommended connection uses a two-valve manifold connected between the transmitter and the process pressure. Before connecting the transmitter remove the protection caps and carefully inspect the sealing face and threaded bore of the connection for damage.

Piping connections

Liquid service (Figure 2-2a)

Liquid measurement connections should be made to the side of the process line to avoid deposits of sediment. The transmitter should be mounted beside or below the connection so that gases vent into the process line.

Gas service (Figure 2-2b)

Gas measurement connections should be made to the top or side of the process line. The transmitter should be mounted beside or above the connection allowing any liquid to drain into the process line.

Steam service (Figure 2-2c)

Steam measurement connections should be made to the side of the process line. The transmitter should be mounted below the connection so that the piping remains filled with condensate. Live steam must not come into contact with the transmitter; to prevent this the lines should be filled with water or condensate.

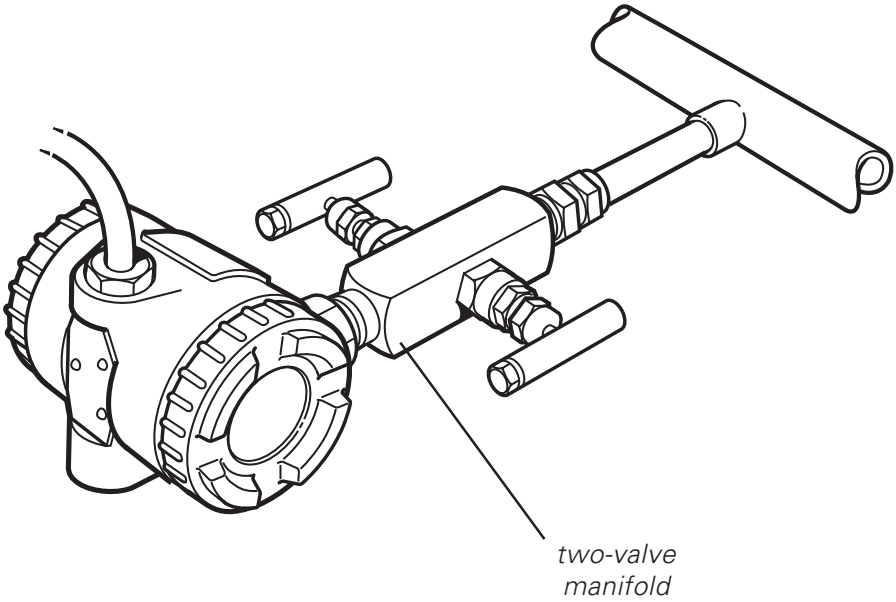


Figure 2-2a Liquid service piping arrangement

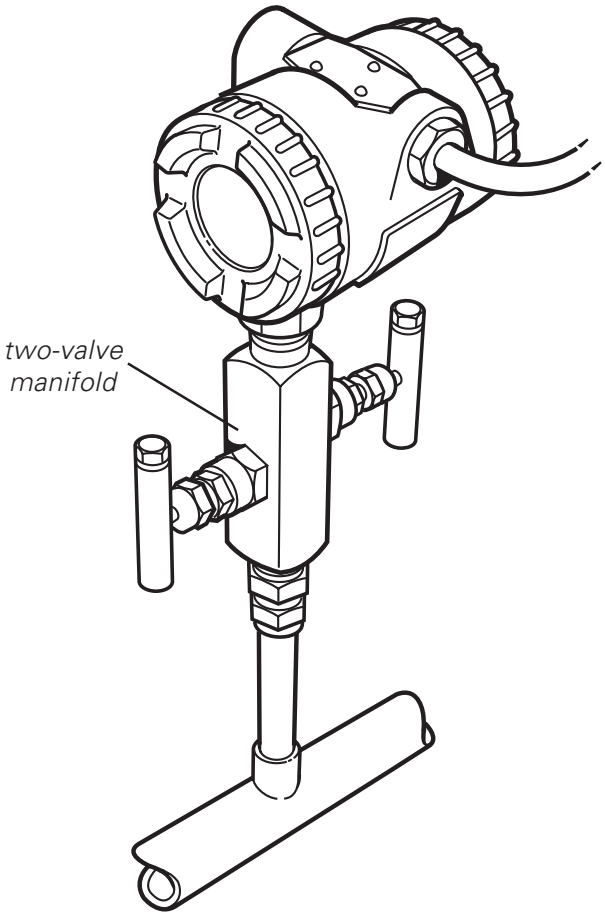


Figure 2-2b Gas service piping arrangement

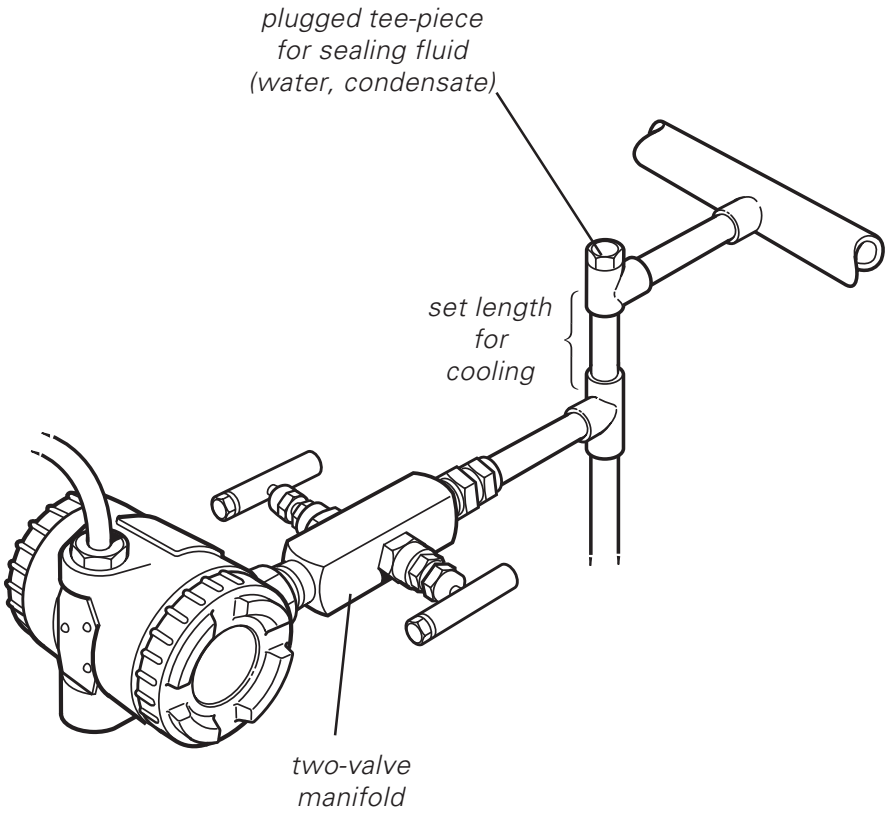


Figure 2-2c Steam service piping arrangement

2.5 Liquid Level Measurement

Gauge pressure transmitters can be used to measure liquid level in an open or vented tank by measuring the hydrostatic pressure head. The head pressure can be calculated by multiplying the liquid height above the transmitter diaphragm by the specific gravity of the liquid.

The tank's volume and shape does not affect the head pressure. If the transmitter is mounted below the zero point (minimum level) of the measured range, zero suppression will be required.

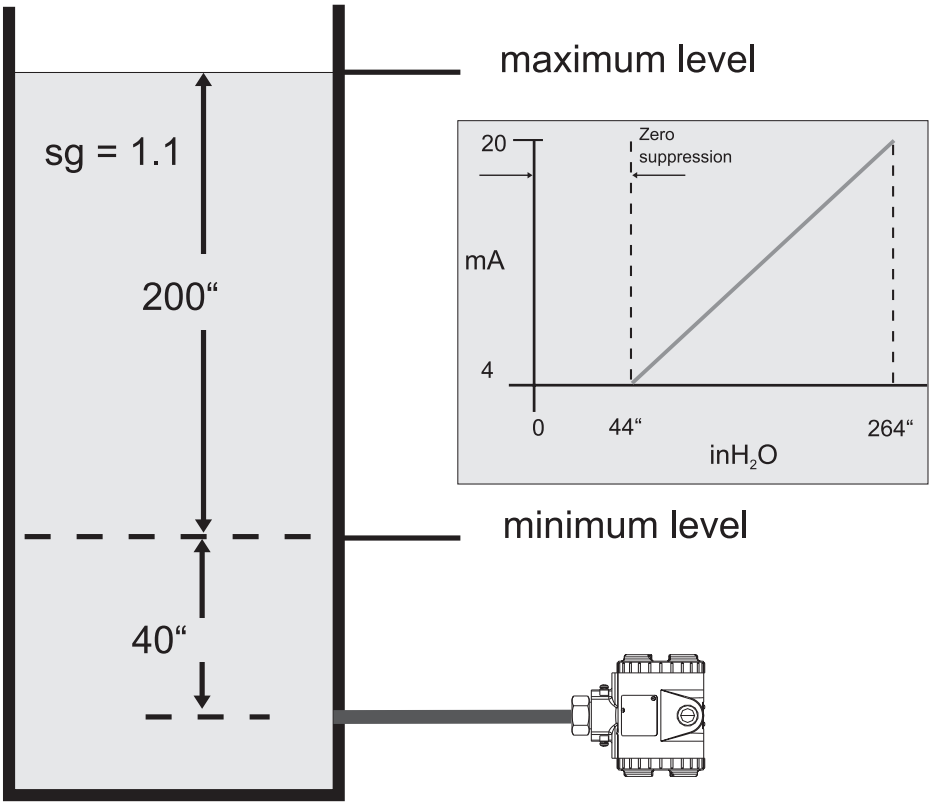


Figure 2-3 Open Tank Level Measurement

Calculations

Min. level = (40" x 1.1) inH_2O
= 44" inH_2O

Max level = ([40 + 200] x 1.1) inH_2O
= (240 x 1.1) inH_2O
= 264 inH_2O

Range = 44 to 264 inH_2O

(Span = 220 inH_2O)

2.6 Electrical Connection

WARNING:

SWITCH OFF AND ISOLATE THE POWER SUPPLY BEFORE CONNECTING OR DISCONNECTING THE TRANSMITTER.

CAUTION:

THE RTX 1000 SERIES TRANSMITTER USES DC POWER IN A 2-WIRE SYSTEM TO CONTROL CURRENT THROUGH A RESISTIVE LOAD.

General

The electrical installation must comply with local wiring codes and standards. To get the full performance from the transmitter, carefully choose the wiring scheme to be used and take care connecting the transmitter.

Power and Maximum Load (Figure 2-4)

The total loop resistance must include the connection wire resistance.

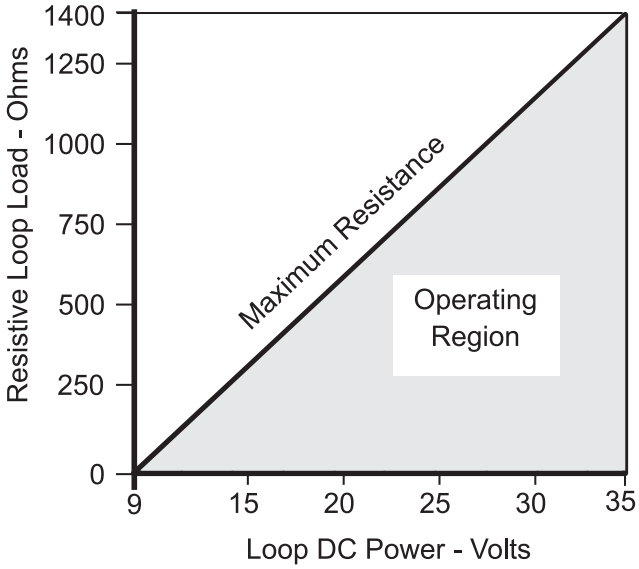


Figure 2-4 Power and Load Requirements

Table 2-1 Wire Resistance

AWG	Wire Diameter		Loop Resistance	
	Inches	(millimeters)	Ohms/Foot	Ohms/Meter
16	0.0508	(1.291)	0.0082	0.0264
18	0.0403	(1.024)	0.0128	0.0418
20	0.0320	(0.812)	0.0204	0.0666
22	0.0254	(0.644)	0.0322	0.1060
24	0.0201	(0.511)	0.0514	0.1680

Note: *The typical values for resistance per length are doubled as the circuit is a current loop.*

Electrical Conduit (Figure 2-5)

Use electrical conduit in accordance with local wiring codes. The transmitter electronics housing contains two threaded holes to receive electrical conduit unions. The conduit arrangement prevents ingress of moisture in the housing. If conduit is not used, the correct cable gland/ plugs should be fitted in the two threaded holes to seal the housing.

Wire Selection (Table 2-1)

Shielded two-wire, twisted pair is the recommended method for field wiring. This arrangement minimizes signal errors caused by EMI, RFI and transients. For most types of reading/display equipment the wire shield should be grounded at one point only.

- Do not ground the shield at the transmitter.
- The shield wire should not touch the transmitter case.
- Select a wire gauge for the required total length so the transmitter operates within the load requirements.
- When using external power supplies, make sure the connection polarity allows current to flow into terminal + and out of terminal -.

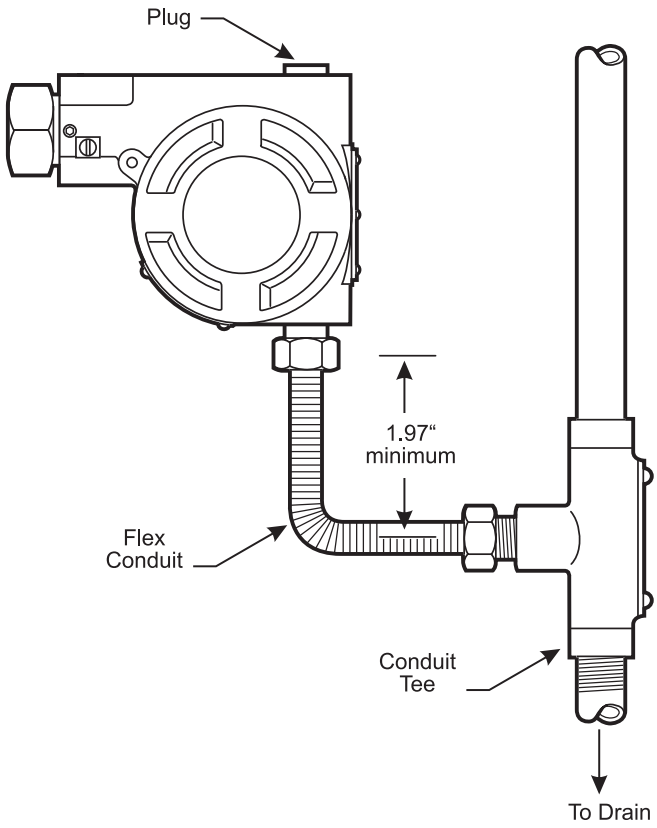


Figure 2-5 Electrical Conduit

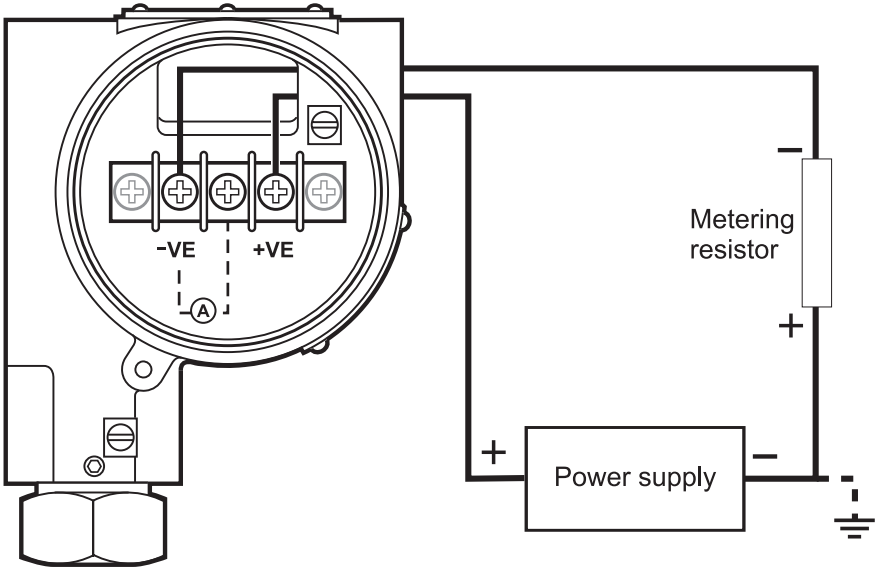


Figure 2-6 Transmitter Wiring

NOTES

1 *The wiring can be grounded on either side of the transmitter. Multiple grounding can cause incorrect or `noisy' signals. The ground signal should be connected at one point only. When in doubt, ground the wiring shield at one end only.*

2 *If required, signal loop can be grounded but at one point only.*

3 *Do not ground shields at the transmitter. Shield wire should not touch the transmitter case.*

2.7 Description (Figure 2-7)

The RTX 1000 Series pressure transmitter is enclosed in a compact and lightweight aluminum alloy housing that enables direct mounting to pipeline installations. The housing contains a pressure sensor, two printed circuit boards and connecting cables and terminal block.

Sensor module

The sensing element of the sensor module is constructed from a micro-machined silicon diaphragm assembly bonded to a stainless steel or Hastelloy body. A Hastelloy isolation diaphragm and silicone fluid isolates the sensing element from the process media. The sensor piezo-resistors, diffused into the surface of the silicon diaphragm, produce a signal in response to applied pressure. The accuracy of the sensor element is enhanced by measuring the residual errors over its operating temperature and pressure range and applying digital compensation in the transmitter electronics.

Electronics

The integrated circuitry is modular and forms a compact circuit assembly controlled by a microprocessor. The microprocessor also performs zero and span calibration adjustments and high or low gain selections. The rangeable electronics produce a stable signal unaffected by temperature changes.

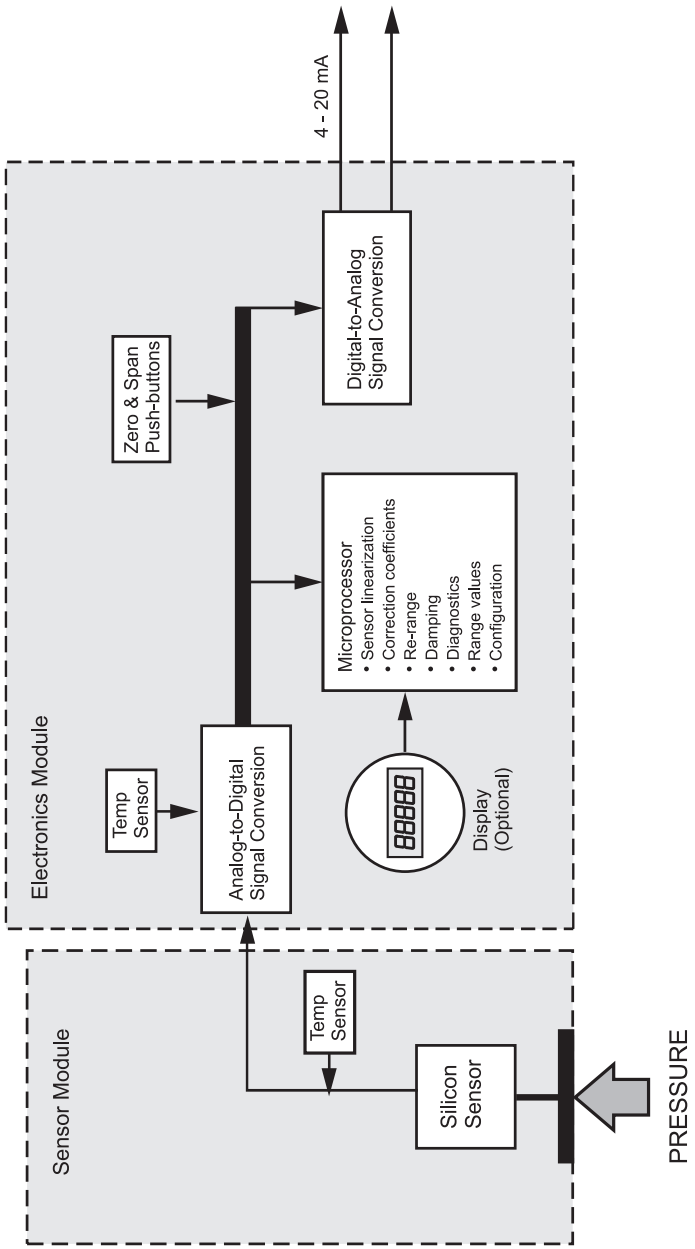


Figure 2-7 Transmitter schematic diagram

2.8 System Check

After installing the system carry out a leak check. Before the system is filled and/or commissioned, use either compressed air (or other inert compressed gas) or water to check for leaks. The pressure must be below the maximum transmitter operating pressure, but at least equal to the normal operating pressure to reveal any leaks:

- If necessary, install a milliammeter to measure the output signal.
- Apply pressure at a convenient point on the system.
- Use a suitable leak detection solution and apply to all of the impulse piping, valves and transmitter connections and joints.
- Look for a continuous stream of bubbles.
- Bleed the system and remove source fitting.
- Return the system to the original configuration.

WARNINGS:

1. **If the process fluid is caustic or hazardous, modify the procedure detailed to safeguard personnel.**

2. **Use extreme care when bleeding high temperature liquids. Bleed piping may need to be installed.**

Preparation

The appropriate readout instrumentation should be connected so that the pressure signal can be monitored.

- Apply power to the transmitter
- Check the pressure signal.
- Configure the system and operate.

3 OPERATION

CAUTION:

DO NOT OVER-PRESSURIZE THE SYSTEM.

Pressure Ranges

The RTX 1000 series transmitter can be supplied with different upper range limits (URL) in gauge or absolute pressure configurations.
The transmitter label shows the factory calibrated range; any span value equal to or greater than 10% of the URL can be set and calibrated.

3.2 Configuring the transmitter (Figure 3-1)

General

To configure the transmitter, use the switches on the Printed Circuit Board(PCB). To access the PCB, unscrew the end cap (with access to the electronics module).

Switch 1 - Write protect

Set to ON to prevent changes to the configuration.
Set to OFF to use the push-buttons Span (S) and Zero (Z) to adjust the Upper and Lower Range Value (URV and LRV).
For transmitters with the optional LCD indicator, the push-buttons S and Z also let you set up the range of values shown on the display.

Switch 2 - Failure alarm

If the self-diagnosis circuit detects a transmitter failure, the output signal automatically increases to over-scale (>21.0 mA) or decreases to under-scale (<3.6 mA). These signal levels comply with the NAMUR NE 43 profile. This switch is read only at transmitter power-up.

Switch 3 - Damping

Set to ON to give a time constant of 1.0 second.
Set to OFF to give a time constant of 0.1 second.
This switch is read only at transmitter power-up.

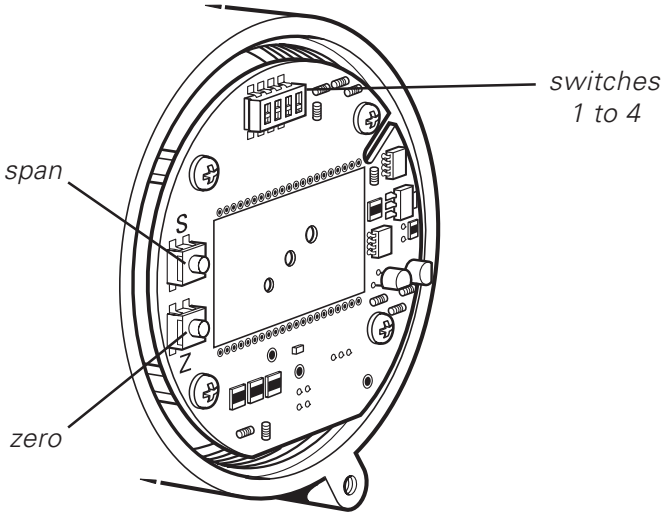


Figure 3 -1 Switch Location

Switch 4 - Push-button function

Set to ON to use the push-buttons S and Z to adjust the upper and lower range value (URV and LRV).

Set to OFF to configure the optional LCD indicator.

Push-button switches - Span (S), Zero (Z)

The two push-button switches S and Z let you adjust the upper and lower range value (URV and LRV).

For transmitters with the optional LCD indicator, the push-buttons S and Z also let you set up the range of values shown on the display.

Adjusting the range

Procedure

1. Set switch 1 to OFF (write protect).
2. Set switch 4 to ON (push-button function).
3. Zero setting:
   Press Z and S switches together, apply zero pressure (LRV), press Z.
4. Span setting:
   Press Z and S switches together, apply span pressure (URV), press S.
5. Set switch 1 to ON. This protects the new settings and prevents accidental re-configuration of these values.

Setting the display values (Optional LCD indicator)

The display shows a value proportional to the measured pressure. To define the displayed value, you must use the push-buttons S and Z to set two values. The two values are set when the transmitter output is 4 mA and 20 mA. A time-out operates at each stage of the display setting.
The factory configuration displays 0 to 100% where 4 mA = 0% and 20 mA = 100%. If necessary the display can be changed to show any value between +9999.9 and -9999.9.

Procedure

The set-up includes the following tasks:
1. Decimal point position.
2. Zero value setting.
3. Zero value polarity setting.
4. Full-scale value setting.
5. Full-scale value polarity setting.

To set up the display:
1. Set switch 4 to OFF (push-button function).
2. Set switch 1 to OFF (write protect).
3. Carry out the procedure in table 3-1.

Table 3-1
Display set-up

Step	Action	Result	Display
1	Press S and Z	Enters display set-up mode with the decimal point position flashing *Note: In display set-up mode, pressing S and Z together steps to the next function.*	-8.8.8.8.8
2	Press Z to move DP	Flashing decimal point moves to next position to the right	-8.8.8.8.8
3	Press S and Z to confirm	Decimal point position stored. Display prompts for zero value	ZErO
4	Press Z to set 4 mA	Value to be displayed when transmitter output = 4 mA. Value shown without sign, first character flashes.	0000.0
5	Press Z to increase value of flashing character	Flashing character increased.	1000.0
6	Press S to move to next character	Next character flashes, repeat steps 5 and 6 to enter the required value.	1000.0
7	Press S and Z to confirm	Value displayed at 4 mA output stored. Display alternates between entered value and ----.-	1000.0 & ----.-
8	Press Z to switch between minus sign on and off	Minus sign for displayed value (at 4 mA output) switches on and off.	1000.0 & ----.-
9	Press S and Z to confirm	Sign of 4 mA output stored. Display shows prompt for span set-point.	SPAn
10	Repeat steps 4 to 8 to set value to be displayed when transmitter output = 20 mA.		
11	Press S and Z to confirm	Transmitter goes to normal operation.	

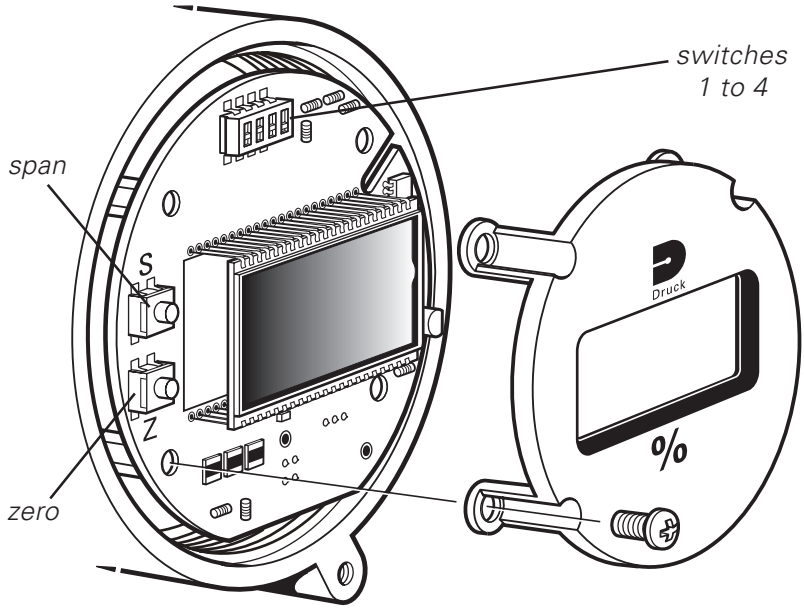


Figure 3-2 Optional Display Switch Location

Failure alarm indications

The display shows ALA, indicating a defined hardware failure. If the transmitter detects a defined hardware failure the electronics module causes the transmitter output to change. This change depends on the position of switch 2, either changing to >21 mA or to <3.6 mA.

Over/under range

The display flashes, if the measured pressure goes above or below the set range of the transmitter, the electronics module causes the transmitter output to change. When the measured pressure is under range, the transmitter output changes to between 3.8 mA and 4.0 mA. When the measured pressure is over range, the transmitter output changes to between 20.0 mA and 20.5 mA.

Intentionally left blank

4 CALIBRATION

4.1 Equipment

- A precision pressure calibrator such as the Druck DPI 610/615.

  To get the specified accuracy for the RTX 1000 series transmitter, the accuracy at each selected pressure must be ±0.15% of the value.
- A 9 to 35 Volt DC power supply (separate or part of another system).
- Fittings and tubing as required.

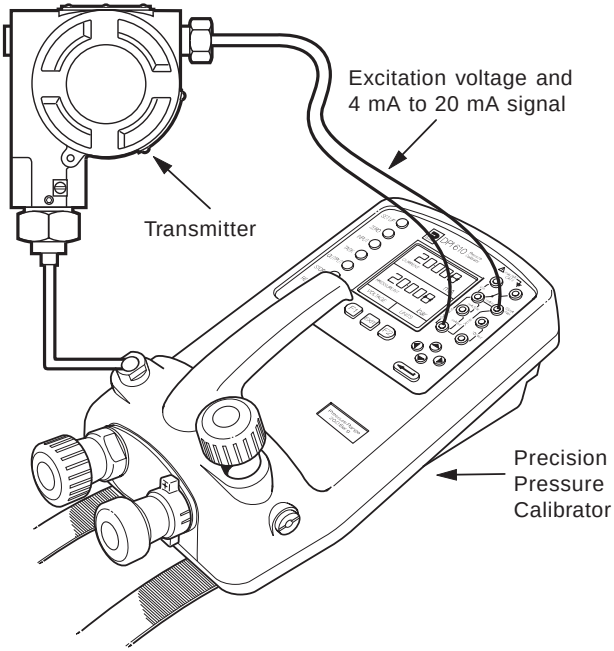


Figure 4-1 Calibration Set-Up

4.2 Calibration

Calibration requires the application of zero and full-scale pressure. Connect the power supply and pressure calibrator. The current output of the transmitter corresponds to the zero and full-scale values set with the push-button switches on the PCB.

Calibration Notes

1 The transmitter stores the calibration values after completing the following procedure and overwrites the old calibration values. The transmitter keeps the old calibration values if the power supply is removed during the calibration procedure.

2 The applied pressure values to be used must be within the lower and upper range limits and meet the minimum and maximum span allowed by the transmitter.

3 Attempts to calibrate the span to a value below the minimum will be ignored and the transmitter returns to normal operation.

5 MAINTENANCE

5.1 General

The RTX 1000 transmitter contains no moving parts and requires a minimum of maintenance.

Visual inspection

- Inspect the transmitter for damage and corrosion. Any damage to the transmitter must be assessed, if the housing is no longer sealed against water and/or dust, the transmitter must be replaced.

Cleaning

- Clean the transmitter case with a damp lint-free cloth and mild detergent.

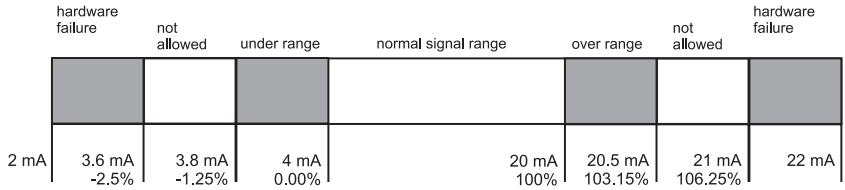
- Corrosion should be removed and the corroded area cleaned and, if necessary, neutralized.

- If the product has been in contact with anything hazardous or toxic, comply with the relevant MSDS references and precautions to be taken when handling.

5.2 Fault Finding

Over/under range

If the measured pressure goes above URV or goes below LRV, the output signal will saturate at the following values:



When the measured pressure is under range the output signal will be between 3.8 mA and 4.0 mA. When the measured pressure is over range the output signal will be between 20.0 mA and 20.5 mA.
If the transmitter hardware fails the output signal changes to above 21 mA or below 3.6 mA (depending on the setting Switch 2).

5.3 Returned Materials Procedure

Should the transmitter require calibration or become unserviceable it can be returned to the Druck Service Department.

Please contact our Service Department, either by 'phone, fax or E-mail, to obtain a Returned Material Authorization [RMA] number, providing the following information:

Product (i.e. RTX1000)
Serial number
Details of defect/work to be undertaken
Calibration traceability requirements
Operating conditions

Safety Precautions

You must also tell us if the product has been in contact with anything hazardous or toxic and, the relevant MSDS references and precautions to be taken when handling.

Important notice

Service or calibration by unauthorized sources will affect the warranty and may not guarantee further performance.

5.4 Approved Service Agents

The following are approved agents for the servicing of Druck Instruments

USA

Druck Incorporated,
4 Dunham Drive,
New Fairfield,
Connecticut 06812,
U.S.A.
Tel: (203) 746 0400
Fax: (203) 746 2494

Japan

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Medie Corp Building 8,
2-4-14 Kichijyoji-Honcho,
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Tokyo 180,
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Tel: (81) 422 20 7123
Fax: (81) 422 20 7155

UK

Druck Limited,
Fir tree Lane
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England.
Tel: (0116) 231 4314
Fax: (0116) 231 4192

France

Druck SA.,
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92600 Asnières,
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Tel: (1) 43 34 24 75
Fax: (1) 43 34 86 08

Germany

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